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GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 REMEDIAL DESIGN

**RESPONSES TO 3 MAJOR AGENCY COMMENTS ON THE
WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2
PRELIMINARY DESIGN REPORT, JULY 2010**

**Comment 1:
Section: 4.2.2**

This section identifies that materials excavated from the northern and western banks of the Willow Boulevard Landfill and the Willow Boulevard Drainageway will be consolidated at the Willow Boulevard Landfill. The ROD (Section 9.1.2 Alternative 2- Consolidation and Containment of Select Materials) states "Under Alternative 2, approximately 13,800 cyd of PCB-contaminated residual, soil, and/or sediment would be excavated from the Willow Boulevard Drainageway, the Area South of the A-Site Berm (including Former Olmstead Creek), the Area East of Davis Creek, and the area near monitoring well AMW-3A, and consolidated with existing residuals at the A-Site Landfill." The preliminary design presented in the Preliminary Design Report and Construction Drawings do not meet this requirement of the ROD.

Response

The disposal criteria set out in the ROD were based on the results of the Focused Feasibility Study (FFS) for the OU, which was finalized in 2004. The FFS assumed a total removal volume of approximately 14,000 cy, with approximately 6,000 cy coming from Willow Boulevard Landfill. After the Consent Decree was finalized and the Preliminary Design completed, the total removal volume was revised, and is now estimated at 100,000cy, with approximately 13,000 cy from the Willow Boulevard Landfill. The increased volume makes disposal in both landfills a much more practical option.

Three other project elements that do not appear to be fully considered in the FFS and ROD are worker safety, potential adverse environmental impacts, and the construction schedule. Currently, the construction schedule is based on conducting remedial actions at the Willow Boulevard Site during the first construction season and A-Site in the second. Closing the Willow Boulevard Landfill first has been identified to be the safest, and most cost-effective approach to cleanup activities in that part of the OU. If it became necessary to transport material excavated from Willow Boulevard over to A-Site, the limited access between the two areas (i.e., the one-lane bridge over Olmstead Creek) could present issues associated with worker safety. Approximately 650 round trip truck loads would be required to transport 13,000 cy (using a 20 cy capacity dump truck) from Willow Boulevard to A-Site. Maintaining two-way traffic in areas where there might be limited site distances and rough terrain would increase the potential for vehicle accidents, increasing the potential for injuries to site workers. These risks are manageable, but would be in addition to potential risks associated with disposal approach described in the Preliminary Design Report.

Disposing materials at Willow Boulevard will reduce the amount of time both disposal areas are open to the weather and thereby reduce adverse environmental impacts of the remedial action relative to the alternative. Having both landfills open for longer than necessary essentially doubles the stormwater management issues and increases the potential for leachate generation due to contact between stormwater and residuals. The potential for air transport of dust and PCBs from the additional truck traffic would also increase.

Given potential weather conditions and traffic congestion at the Olmstead Creek bridge (only one truck would be able to pass over the bridge at a time), it may take upwards of 30 minutes to

safely complete one round trip. This could potentially add over 300 hours (five to six weeks) to the construction schedule, which may hinder the ability to complete the closure of Willow Boulevard in one construction season.

Comment 2:

As identified in Section 1 Excavation of the 2009 Consent Decree Statement of Work (SOW), the "Settling Defendant shall excavate the Willow Boulevard Drainageway, the Area South of the A-Site Berm, the Area East of Davis Creek, and the former Olmstead Creek Area to the remedial action goal of 0.33 ppm PCB. The areas to be so excavated are delineated on Figure 2 of the ROD. The Settling Defendants shall excavate these four areas to the 0.33 ppm PCB cleanup goal;..." Based on Figures 2-1, 2-3, 2-4, and 4-1, select portions of the Willow Boulevard Drainageway, the Area South of the A-Site Berm, and former Olmstead Creek Area has been designated as wetlands and will be excavated to the 0.33 ppm cleanup goal and any other portions will be excavated to meet a 6.5 ppm PCB cleanup goal. As indicated above, the Settling Defendants have agreed to excavate the entire Willow Boulevard Drainageway, the Area South of the A-Site Berm, the Area East of Davis Creek, and the former Olmstead Creek Area to the remedial action goal of 0.33 ppm PCB. The Preliminary Design Report and Construction Drawings do not reflect this agreement of the Consent Decree.

Response:

The application of the 0.33 mg/kg criterion was discussed in a teleconference held with USEPA and MDNRE on August 25, 2010. ARCADIS and Georgia-Pacific agreed that all areas within the Willow Boulevard Drainageway that are not managed by capping would be excavated to a cleanup criterion of 0.33 mg/kg. The agreement to apply this number to a larger area than described in the Preliminary Design Report does not constitute Georgia-Pacific's concurrence with USEPA or MDNRE that it is appropriate to apply a sediment criterion to upland soils for any reason, nor does it signify concurrence with USEPA or MDNRE concerning the application of this criteria to soils. Georgia-Pacific does not believe the application of the 0.33 mg/kg sediment criterion to soils is technically valid.

The attached figure shows the updated proposed excavation areas and limits of the cap within the Willow Boulevard Drainageway, assuming excavation to a 0.33 mg/kg criterion. The revised extent of excavation includes one additional area around sample location WB09-09 that was previously excluded based on application of the 6.5 mg/kg criterion, as the maximum PCB concentration in this sample is 0.59 mg/kg. The extent of excavation may also be revised as applicable in the Pre-Final Design Report.

As requested, Section 3.1.1.1 has been revised to reflect the above as follows:

As described in the Remedial Design Work Plan for the OU (RD Work Plan; ARCADIS 2010a), soil remediation is anticipated to occur primarily on property owned by Georgia-Pacific that is zoned for light industrial use – as a result, the Part 201 Generic Residential Land Use Criterion of 4 mg/kg for PCBs in soil is not a basis of design for the remedial action. The PCB criterion that is the basis of design for the Willow Boulevard Drainageway, the area south of the A-Site berm, and the area east of Davis Creek is the sediment cleanup criterion of 0.33 mg/kg, as stated in the ROD. For the area near monitoring well AMW-3A, the basis of design is 6.5 mg/kg PCB, which is the lower end of the No Observed Adverse Effect Level range identified above.

Considering the 0.33 mg/kg criterion may be difficult to achieve, it is the understanding of Georgia-Pacific and ARCADIS that if USEPA determines that the 0.33 mg/kg PCB remediation goal has not been achieved in a particular area, USEPA will consult with MDNRE and Georgia-Pacific regarding (1) whether additional remedial actions will be effective in achieving the 0.33 mg/kg remediation goal in the area; and (2) the potential nature of such additional remedial

actions. Additional remedial actions to be considered include, but are not limited to: (1) additional excavation; (2) backfilling with clean material; (3) capping; and (4) monitored natural attenuation. In determining whether and how to proceed with additional remedial activities, USEPA will consider the extent and concentration of the remaining PCBs in the area(s).

Comment 3:

As identified in Section 1.1 Setback from Kalamazoo River at the Willow Boulevard Landfill of the SOW, "The excavation along the northern banks of the Willow Boulevard Landfill (along the Kalamazoo River) shall be of sufficient distance to create an adequate buffer zone, which ensures that, for the lifetime of the remedy, there is no direct contact between the contaminated residuals within the landfill and the Kalamazoo River. This buffer will also be adequate to prevent PCBs from migrating (by surface water runoff or erosion) from the landfill into the Kalamazoo River. The excavated areas shall be backfilled with clean soil with sufficient organic content to support restoration planting materials and to create an ecologically friendly bank. Additionally, this buffer zone or setback shall be of sufficient size to allow for the installation of and access to groundwater monitoring wells." The preliminary design presented in the Preliminary Design Report and Construction Drawings do not meet this requirement of the SOW.

Response:

To prepare the northern and western slopes of Willow Boulevard for the proposed cover system, it will be necessary to excavate a minimum of 14 feet horizontally back from the edge of the Kalamazoo River (to get down below the base of existing paper-making residuals). In doing so, approximately 6,500 cy of material – including, to a practical extent, all residuals in this 14-foot buffer zone – will be removed from around the northern perimeter of the Willow Boulevard Landfill adjacent to the Kalamazoo River. This excavation will allow for the 3.5-foot thick cover system to be laid at a slope of 25% along the perimeter and the placement of approximately 6,000 cy of clean fill. The proposed final slopes of the northern and western perimeter of the Willow Boulevard Landfill will be able to accommodate equipment to install and access the necessary groundwater monitoring wells – the ability to successfully work on slopes of 25% was proven during the pre-design investigation boring installation along the northern berm. This is described in more detail below.

The buffer zone created by excavation to the required slopes will create a zone approximately 14 feet wide along the river that will be free of residuals. The cover system, which will be constructed over the regraded slope as well as the materials excavated and consolidated in the center of the landfill, will include 12 inches of sand, an impermeable membrane, geosynthetic drainage composite, 24 inches of soil and stone, and a 6-inch vegetative soil layer. The cover system will provide an impermeable barrier between the Willow Boulevard Landfill and the Kalamazoo River, and is designed to achieve the objectives of ensuring "no direct contact between the contaminated residuals in the landfill and the Kalamazoo River" and preventing erosion and runoff of PCB-containing paper-making residuals into the river, as described in the ROD and SOW.

To address the collection of representative groundwater samples from the wells installed along the northern and western perimeter of Willow Boulevard, the use of double-cased wells is proposed. Double-cased groundwater monitoring wells will be installed in a manner similar to that used for other wells (i.e., WMW-3A) installed through paper-making residuals at the Willow Boulevard Landfill during the Remedial Investigation (RI). No PCBs were detected in two rounds of groundwater samples collected from WMW-3A during the RI in 1996 and 2000, proving the double-case technology can accommodate installation of monitoring wells through paper-making residuals. USEPA stated a concern that installation of monitoring wells through paper-making residuals may compromise the interpretation of groundwater sample results; however, no specific rationale was explained. ARCADIS believes the available data for the OU specifically and the Site in general provide proof of the reliability of this approach – double-cased wells have been

installed and monitored successfully at numerous locations at the landfill OUs of the Superfund Site. Further, if there were a detection of PCBs at a double-cased well believed to be associated with the temporal impacts of well construction, this result could be differentiated by completing a trend analysis of the data.

During the teleconference with USEPA and MDNRE on August 25, 2010, USEPA expressed concern that the proposed approach for construction of the buffer zone was not consistent with the ROD, and that it would not allow installation of reliable monitoring wells. ARCADIS asserts that the construction approach as described is consistent with the ROD. The ROD does not require a particular size, shape, or configuration of the buffer zone. Nor does it state that the monitoring wells cannot pass through residuals, rather the ROD only requires that the buffer be sufficient to allow installation of the wells and future access to the wells. The configuration as proposed in the Preliminary Design Report provides an adequate buffer zone to satisfy the requirements of the ROD.

ARCADIS has evaluated several alternative approaches to address the agency's concerns about installing the groundwater wells through paper-making residuals. These alternatives include the following:

- Localized excavation and clean backfill only around the proposed groundwater monitoring wells, with the cover system being retained along the full slope. In this option, it is likely that the monitoring wells would be moved downslope to minimize the additional excavation volumes, and it is estimated that an additional 1,000 to 2,000 cy of material would need to be removed. This option has several drawbacks. First, established groundwater flow pathways would be changed. Preferential pathways to groundwater may result from backfilling the excavations with a material having a higher hydraulic conductivity property than paper-making residuals. Another issue is the complications associated with excavation below the water table. A portion of the excavated material would be taken from below the water table to reach the approximate bottom of residuals in this area. It is well established that excavating below the water table causes mixing between materials targeted for removal and native materials. This creates uncertainty as to the nature and extent of residuals after excavation, and may unintentionally expand the affected area. Additional problems arise with the management of river water, stormwater, and leachate that could collect in the open excavation. The management of water collected in the open excavation would further mix/disturb the base of the excavation and potentially impact the clean soils installed during backfilling operations.
- Excavation back from the shoreline by varying distances along the perimeter of the Willow Boulevard Landfill, and backfilling to achieve a 3:1 slope to top of berm (in this option the cover system would terminate at the top of the berm). As with the previous option, the groundwater monitoring wells would likely be moved downslope to minimize excavation. It is estimated that this option would still result in the excavation of an additional 8,500 cy of material, which would have cost and schedule implications for the project. Similar to the localized excavation option, the existing groundwater flow paths will be altered, excavation would need to be performed down below the water table (thus raising issues of mixing between impacted and non-impacted materials), and there would be an increased need to manage and control river water, stormwater, and leachate.

In contrast to the situation at A-Site, where berms were constructed for dewatering lagoons thus establishing a 'clean' buffer before the placement of paper-making residuals was initiated, Willow Boulevard Site was created by placing paper-making residuals within a backwater area of the Kalamazoo River. Over time, the paper-making residuals (not all of which contain measureable levels of PCBs) have become stable, and based on the results of the Remedial Investigation, we have an understanding of the nature and extent of PCB impacts. To disrupt this setting alters our understanding of the nature and extent of PCB-impacted materials, creates unnecessary

uncertainties, and potentially could expand the extent of PCB into areas that are not currently affected.

Although both of the above options may be viable to incorporate into the design, Georgia-Pacific and ARCADIS assert that the current conditions at Willow Boulevard Site are stable and should not be disturbed. The installation of monitoring wells into unknown subsurface conditions has a greater potential to compromise the interpretation of groundwater data than the installation of double-cased monitoring wells through delineated residuals. Furthermore, ARCADIS believes that it is more reliable to monitor beneath the established interface between waste and native materials as proposed in the Preliminary Design Report.

Georgia-Pacific and ARCADIS believe the current design meets the intent of the setback as described in the ROD and SOW, which is to: 1) isolate the paper-making residuals from the River, 2) prevent erosion and run-off of PCB-containing materials, and 3) provide for the installation and access of monitoring wells. The current design adequately meets these requirements.